18 March 1963

MEMORANDUM FOR: Assistant for Plans and Development

THROUGH : Executive Secretary, TDC

SUBJECT : Staff Study - Procurement of an On-Line X, Y, Coordinate Plotter

1. PROBLEM:

To provide a coordinate plotter capability to fulfill NPIC plotting requirements.

2. FACTS:

25X1A

At present the only electronic coordinate plotter available for use at NPIC is a [redacted] Model H, purchased approximately 5 years ago. At present it is obsolete by several generations of plotters and no longer capable of filling NPIC plotting requirements. With the installation of the [redacted] Computer and growing requirements, the need now exists for a family of more versatile plotters.

Three distinct requirements exist. They are:

(1) An on-line remote station plotter for producing plotted data at some location other than the computer area. These plotters will be located at key P.I. stations throughout [redacted] as required. The prototype plotter is now on order from [redacted] and will be delivered shortly.

(2) A high precision plotter for photogrammetric use. This machine must be of maximum accuracy and will be too slow for production use. Final specifications and selection of this unit has not been made as yet.

(3) A high production unit for on-line use with the computer capable of sufficient speed, accuracy and versatility of handling NPIC plotting requirements other than those listed above.

3. DISCUSSION:

25X1A

The attributes sought in a plotter for connection to the [redacted] stems directly from the proposed uses for such an on-line plotter. The proposed applications are:

(1) The preparation of planimetric representations, over a wide

range of scales, of entities observed on photography and processed through the photo-measurement system.

(2) The preparation of map overlays keyed to specific map sheets and showing the limits or extent of photo coverage. The overlays or charts may be up to 60" on a side (jet navigation charts or similar coverage).

(3) The preparation of miscellaneous requirements such as profiles, graphs, etc.

(4) An additional application, not now planned but altogether feasible, consists of plotting vehicle track directly on suitably constructed maps or charts while the mission is in progress.

Even though the output to the plotter for the above requirements is in application prepared by a "batch" program, the batch program is one that is called for by the real-time program. Consequently, the application is best described as quasi real time and should have a response time of no more than two hours. For this to be the case, extreme reliability is essential. In addition, the plotter should require only occasional checks by the computer systems operator (essentially it should be capable of unattended operation).

The design of any plotter system calls for some compromise solution to the problem of speed versus plotting accuracy. After studying the matter, it was determined that any plotter capable of meeting the Geodetic/Photogrammetric accuracies called for by TID/TAB would be too slow to meet our bulk production requirement where the high accuracies were not required. When this was determined, it was decided that the precision plotting requirement would be handled by some future off-line plotting device.

Based on the above criteria and the current state of the art, specifications were drawn up for soliciting proposals. A survey was made of plotter manufacturers and three companies were selected as having the best capability to produce the plotter and asked to submit proposals. It should be noted that one of the factors in selecting the manufacturers was their ability to design the computer
25X1A interface to conform to [redacted] specifications. The three manufacturers selected
25X1A [redacted]
25X1A
On the basis of the proposals received, [redacted]
25X1A was dropped from further consideration on the first round. The [redacted] equipment would be an analog device which would offer the maximum plotting speed but at
25X1A the sacrifice of both reliability and accuracy. The two remaining proposals [redacted] placed us in the rare position of having to decide between two organizations evenly matched in capability. After lengthy discussions with both groups there exists little doubt that either organization can

25X1A

meet the objectives laid out in the specifications. During the negotiations both companies revised their proposals to further conform to our specs. It should be noted at this point that the plotting table that [redacted] proposed would be manufactured by [redacted] on subcontract from [redacted] and is identical to the one [redacted] proposed. In this circumstance the question then becomes one of the capabilities of both groups in circuit and servo designs. It is our feeling that the [redacted] group utilizes a somewhat more conservative, and hence possibly more reliable, circuit design than [redacted] Additionally, there is an advantage to be gained by having the complete manufacture and assembly of the system in the hands of one manufacturer. On this basis [redacted] Incorporated is considered to have the best capability to build the plotter.

4. CONCLUSIONS:

On complete evaluation of the proposals submitted, [redacted] has been selected as having the best overall capability to produce the on-line coordinate plotter. This conclusion is based on [redacted] offering the best technical presentation, fabrication of entire unit with no subcontracts, more favorable price structure, and probable highest reliability.

5. RECOMMENDATIONS:

It is recommended that a contract be awarded to [redacted] for the design and fabrication of a coordinate plotter as outlined in their proposal of 27 November 1962 and amendment of 24 January 1963. The proposed CPFF price is [redacted] It is further recommended that the Office of Logistics incorporate the necessary provisions in the contract for providing the technical monitor progress photography or sketches, and monthly technical reports.

25X1A

/s/ [redacted]
Development Branch, P&DS

Distribution:
Orig & 1 - Asst. for Admin
1 - Asst. for Ops
1 - Asst. for P&D
1 - SIO/CIA
1 - SIO/Army
1 - SIO/Navy
1 - SIO/AF